

**NATIONAL SEMICONDUCTORS LTD.**

230 AUTHIER ST., MONTREAL 9, CANADA

TENTATIVE
DATA**NSL-703P
SILICON PHOTOVOLTAIC CELL**

NSL-703 P is a high output, self-generating n on p silicon photocell. Its fast response makes it ideal for computer, control and instrument applications.

The NSL-703 P is sensitive to the whole visible spectrum and to the near infrared, corresponding very closely in response to the output of an incandescent lamp. It is best used with a low impedance load such as encountered in the input of most transistor amplifier circuits.

The current output of this cell is extremely stable over the period of years, it is not affected by moisture and, therefore, hermetically sealed construction is not required.

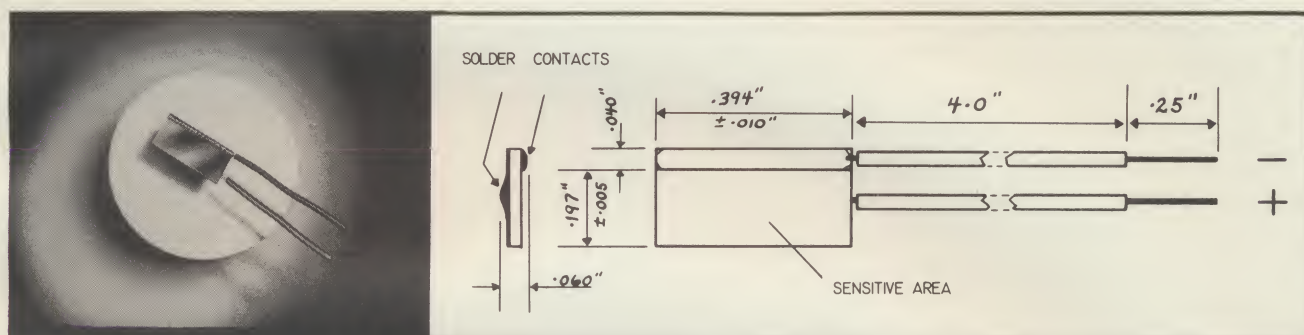


FIG. 1 - NSL-703P ACTUAL SIZE

FIG. 2 - OUTLINE DIMENSIONS

GENERAL DESCRIPTION

Construction	Rectangular silicon chip, plastic coated.
Leads	No. 30 stranded copper wire applied with 60/40 solder, vinyl ins. 4" long.
Mounting	Epoxy cement to any surface.
Special Mounting	Special mounting to customer's specifications can be provided.

PHOTOELECTRIC CHARACTERISTICS

Short circuit current (500 Ftc 2800° K)	1500 ua min.
Open circuit voltage (500 Ftc 2800° K)	0.42 volts min.
Current at 1K Ohm load (500 Ftc 2800° K)	400 ua min.
Current at 1K Ohm load (100 Ftc 2800° K)	200 ua min.
Maximum reverse current (dark) at .5 v applied	25 ua
Maximum reverse current (dark) at 1.0 v applied	50 ua
Maximum applied reverse voltage	2 volts
Speed of response (depends on circuit resistance)	15 Microseconds
Spectral response (useful range)	0.4 - 1.1 Microns
Spectral response (peak)85 Microns
Maximum operating temperature range	-65° C to + 150° C

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do it the **LIGHT** way



NSL-701-9P

N ON P SILICON READOUT CELL

NSL-701-9P is an array of 9 photovoltaic cells constructed on a single piece of silicon. It is particularly intended as a readout of punched paper tape or cards, code wheels, etc. The response extends across the whole visible spectrum and on into the near infrared, matching well the output from an ordinary incandescent lamp.

The cell is produced by high temperature diffusion of an n-type impurity into a p-type base, yielding an n on p photovoltaic detector. The p-type sides of all segments have a common lead while the n-type sides are isolated from one another and have individual leads. Upon illumination the individual segments develop negative voltages with respect to the common lead. The application of a moderate positive voltage results in a small dark current.

The cells are fast in response, are uniform in response from segment to segment, have a low dark current when biased with a small reverse voltage, and have an output that remains constant over long periods of time. In these respects these cells are an improvement over similar cells made by the p on n process.

Mechanical Specifications (9 elements)

Overall dimensions200" x .880" x .140" thick
Center to center spacing100"
Sensitive area (per segment)080" x .160"
Mounting	Soldered to brass backing plate with tapped holes. Other mounting methods to special order.

Similar Cells with 5 to 8 segments available.

Electrical Specifications (per segment)

Open circuit voltage *	.35 volts min.
Short circuit current30 ma min.
Current at 1 K Ohm load275 ma min. center value.
	Variations within a multielement cell are within $\pm 10\%$ of the center value.
Reverse leakage current	10 μ A max. at .5 volts applied.
	Cell at 28°C in dark.
Speed of response (depends on circuit resistance)	8 Microseconds
Spectral response (useful range) ...	0.4 - 1.1 Microns
Spectral response (peak)85 Microns
Max. operating temperature range ...	-65°C to +150°C.

* Test Conditions: 500 Footcandles of illumination from lamp at 2800°K.
do it the LIGHT way

NATIONAL SEMICONDUCTORS LIMITED
230 Authier St., Montreal 9, Que.

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